

organized, as just described, permits implementation having a high density of integration while ensuring the capacitor exhibits high reliability and a constant capacitance.

REMARKS

Claims 12-16 and 21-24 are pending in the Application; all of which stand rejected. Also, various sections of the specification are objected to. In response, Applicants have amended claims 12 and 15, the Title and the Abstract. No new matter has been introduced by any of these amendments.

The Examiner asserts that 35 USC §120 has not been complied with because no reference to the parent application (Serial No. 09/095,612) is included in the specification. The Examiner's attention is directed to item 9 (on page 2) of the Request Form filed January 10, 2001 which expressly requests insertion of the needed referencing sentence into the Application.

The Examiner contends that the claim for foreign priority is problematic for a variety of reasons. Applicants respectfully assert that priority is properly being claimed to Application Serial No. 9-367189 which was filed December 24, 1997 and that the parent application, from which priority is presently claimed, was filed June 11, 1998, well within the one-year period. Furthermore, certified copies of the priority document were filed in the parent case and are not required to be filed in this Divisional case (as explained in MPEP 201.14(b)).

The Examiner contends the title of the Application is not descriptive. In response, Applicants have amended the Title to be more descriptive of the present invention.

The Examiner objects to the Abstract. In response, Applicants have modified the Abstract to remove references to those elements that pertain to the parent application and to add a reference to the lower electrode assembly having first and second electrodes that are adjacent through a part of the insulating film, as recited in claim 12. Applicants respectfully submit that the amended abstract's identification and description of both the arrangement and the alignment of the elements of the capacitor effectively disclose both its "organization" and its "operation" as requested by the Examiner.

Claims 12-16 and 21-24 stand rejected under 35 USC §112 for being indefinite. The Examiner contends that the specification does not disclose a two-part electrode with the parts being separated by part of an insulating film, as recited in claim 12; but, instead, discloses two distinct lower electrodes separated by a part of the insulating film. The Examiner contends that the description of the lower electrode, in lines 10-12 of claim 12, appears redundant and, therefore, unnecessary. In response, claim 12 has been amended to recite a lower electrode assembly that comprises distinct first and second lower electrodes. FIG. 39 of the originally filed specification, for example, discloses lower electrode 170a and lower electrode 170b which Applicants have chosen to label as a "lower electrode assembly" in order to simultaneously refer to both lower electrodes. Accordingly, no new subject matter has been added.

The Examiner appears to reject claim 15 (but identifies it as claim 4) under 35 USC §112 because the "or" denotes alternatively different structures. In response, Applicants have replaced the "or" phraseology with the more acceptable "and" phraseology for reciting alternative structures within a claim.

Applicants assert that one of ordinary skill would have no difficulty in determining the scope of claims 12 and 15 as amended, when interpreted in light of the specification, and, therefore, respectfully request reconsideration and withdrawal of the rejection under 35 USC §112 of claims 12 and 15, and dependent claims 13-16 and 21-24.

Claims 12, 14 and 15 stand rejected under 35 USC §102(b) as anticipated by Gonzalez et al. (US 5,168,073). As amended, claim 12 recites that the upper electrode is formed on an interior portion of the first and second electrodes. In direct contrast to amended claim 12, the lower electrode of Gonzalez et al. is not shaped so as to have an interior portion and, therefore, the upper electrode is not formed on an interior portion of any lower electrode. Thus, Gonzalez et al. does not identically disclose every feature recited in claim 12, as amended. Applicants respectfully request reconsideration and withdrawal of the rejection under 35 USC §102 of claim 12 and dependent claims 14 and 15.

The structural differences between the present invention and the device of Gonzalez et al. are significant and functionally meaningful. In Gonzalez et al., referring to FIGS. 7, 8 and 10, it is necessary to make a conductive tungsten film 90, to be the capacitor lower electrode, sufficiently thick so as to embed an opening formed in an oxide film 75 in the semiconductor device of this reference. When the conductive film 90, which is positioned on an upper surface of the oxide film 75, is removed for this purpose (as shown in FIG. 8 of Gonzalez et al.), a problem arises when removing the conductive film 90 which has been deposited relatively thick on the upper surface of the oxide film 75. Typically, chemical-mechanical polishing (CMP) is used to perform the

removal. As the conductive film 90 removed by the polishing is thick, there is considerable variation at the different positions of the film thereby requiring different amounts of polishing to remove the conductive film from various positions. Generally, in order to remove conductive film 90 on the upper surface of the insulating film 75 completely (to prevent generation of any residue), over polishing is performed wherein even after the conductive film 90 positioned on the upper surface of the oxide film 75 is removed, polishing is continued to remove an upper layer of the oxide film 75.

As there are positional variations in the amount of polishing as mentioned above, the amount of polishing of oxide film 75 and of the conductive film 90 filled in the opening of the oxide film 75 also varies positionally. Therefore, conductive film 90 functioning as the capacitor lower electrodes shown in FIG. 10 varies in size. This means that the surface area of the conductive film 90 also varies. As a result, the resulting capacitors come to have various capacitances, degrading the reliability of the semiconductor device of Gonzalez et al.

Referring to FIG. 39 of the present application, in the semiconductor device specified in claim 12, a capacitor upper electrode is formed on an inner periphery of a capacitor lower electrode. More specifically, the capacitor lower electrode has a so-called cup shape, allowing positioning of the capacitor upper electrode on the inner peripheral portion thereof. Therefore, it is clear that the capacitor lower electrode of the present invention is formed sufficiently thinner than the conductive film 90 of Gonzalez et al. Therefore, in the present invention, when the conductive film to be the capacitor lower electrode is removed by CMP, for example, variation in size of the capacitor lower electrodes can be made sufficiently smaller than in Gonzalez et al.

Claims 13 and 21-23 stand rejected under 35 USC §103(a) as being unpatentable over Gonzalez et al. in view of Wang et al. (US 5,856,220). The Examiner contends that Gonzalez discloses the invention substantially as claimed except for the part of the insulating film between the first and second electrodes having a width smaller than the minimum working size formable by photolithography. The Examiner asserts that Wang et al. disclose such an arrangement and it would have been obvious to combine the teachings of Gonzalez et al. and Wang et al. Applicants respectfully disagree with the Examiner's interpretation of Wang et al. In particular, FIG. 13 of Wang et al. discloses etching the portion of the lower electrode 74 using standard photolithographic techniques in order to separate the adjacent lower electrodes (col. 8, lines 32-44). Since the gap in electrode 74 is formed by typical lithographic techniques and the insulative layer width is even larger than the gap, Wang et al. disclose a device having the portion of the insulative layer between the two electrodes greater than the minimum working size formable by photolithography which is in direct contrast to the recitations of claims 16 and 21. Applicants, therefore assert that Gonzalez et al. in view of Wang et al. do not disclose every feature recited in the claims and respectfully request reconsideration and withdrawal of the rejection under 35 USC §103 of claims 13 and 21 and dependent claims 22-24.

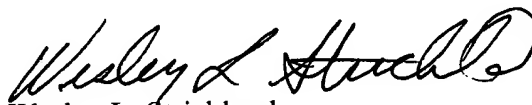
Claim 16 stands rejected under 35 USC §103 as unpatentable over Gonzalez et al. in view of Nakano (JP 06125051), and claim 24 stands rejected under 35 USC §103 as unpatentable over Gonzalez et al. in view of Wang et al. further in view of admitted prior art. Applicant asserts, as explained above, that Gonzalez et al. do not disclose or suggest all the features recited in the amend base claim 12. Accordingly, Gonzalez et al. even

when combined with additional references that merely disclose the specific limitations of various dependent claims do not provide the proper basis for establishing a prima facie case of obviousness for rejecting dependent claims 16 and 24. Applicants, therefore, request reconsideration and withdrawal of the rejection under 35 USC §103 of claims 16 and 24.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



Wesley L. Strickland
Registration No. 44,363

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 WLS:cac
Date: September 27, 2001
Facsimile: (202) 756-8087